

AMERICAN BEE JOURNAL.

EDITED AND PUBLISHED BY SAMUEL WAGNER, WASHINGTON, D. C.

VOL. III.

MARCH, 1868.

No. 9.

[From the Bienenzeitung.]

Foulbrood.

[CONCLUDED FROM LAST NUMBER.]

§ 6.

HOW DOES FOULBROOD ORIGINATE?

This question is still involved in the utmost obscurity, and the opinions of bee-keepers differ greatly. My own conviction is that it arises from causes as various as the phenomena it presents and the character it assumes. I can hence do little more now than restate briefly the views entertained of it by prominent writers on bee culture.

FIRST VIEW.—It is believed by some that a minute black fly, the *Phora incrassata*, enters the hive and deposits its eggs in the brood, selecting us the nidus only the uncapped but most advanced larvæ, and depositing in each only a single egg. The phora larva hatched from this egg, parasitically consumes the viscera of the bee-larva which it inhabits, just as the larva of the ichneumon fly lives on or in the common cabbage caterpillar. Maturing in the course of five days, it then leaves the carcass of the bee-larva by an opening visible by the naked eye, and perforating the cap of the cell, falls to the bottom of the hive, and either spins its cocoon among the droppings found there, or passes out to undergo its further metamorphoses in the earth. So long as phora larva inhabits the bee-larva, the latter, according to Dr. Donhoff, remains alive, but finally dies in consequence of the abstraction of its internal fatty substance by its parasitic foe. Decomposition thus virtually begins already while the larva is still living, though running into putrescence only after death.

Dr. Asmusz alleges that he found many phora larvæ in the larvæ of bees, and says that to see them it is only necessary to decapitate a bee-larva in which the first symptoms of foulbrood are exhibited and carefully press out the juices of the body. By repeating this process several times, the operator can hardly fail to detect one or more phora larvæ. Or if the body of a bee-larva be held before the light of a candle in a darkened chamber, the motions of the contained parasitic larva will be plainly perceptible. But, ac-

cording to Dr. Asmusz, phora larvæ are not found in all bee-larvæ, but only in comparatively the smaller number. Yet, by the miasm diffused in the hive by the putrid larvæ, others not thus parasitically infected, also become infected, die, and putrify. Thus, while a portion only of the brood perishes, and another portion develops in health, the case is analogous only to what occurs in other pestilential diseases, such as peripneumonia, rinderpest, &c., whereof of animals similarly exposed, some are infected, while others escape, owing perhaps to a peculiar habit of body at the time. The like is often observed when contagious diseases, such as pestilence, cholera, typhus, scarletina, &c., to which the human system is subject, prevails: numbers are stricken down, while others remain unattacked, even in the most infected districts. This is the view of Dr. Asmusz, as presented in his treatise on the parasites of the honey bee; and it must be admitted that the phora, as figured on his plates, has a decidedly mephistophelian appearance and expression.

Against this view it may be urged—

First, That the *phora incrassata* abounds everywhere, and is bred in every hive containing dead bees. Yet there are numerous districts totally exempt from foulbrood. This, as Mr. Kleine remarks, could not be the case, if such were its origin—for the same cause should, in like circumstances, produce the same effect, if nature designed that the phora should lay its eggs in the larvæ of the honey bee.

Secondly, The *phora incrassata* does not lay its eggs in living, but only in dead organisms.

Thirdly, If, as Dr. Asmusz seems to have found by microscopic examinations, the *phora incrassata* does, in exceptional cases, lay its eggs in bee larvæ, it would be in the highest degree singular that the result should be the putrid decomposition of such larvæ—a result never produced in other analogous cases. And why do only larvæ thus destroyed by the phora diffuse a putrid miasm, such as is not diffused by decomposing larvæ which have died from some other cause.

Fourthly, If Dr. Asmusz's views were correct—the pupæ of *phora incrassata* would be as numerous in foulbroody hives as in other hives con-

taining dead bees in which the phora had laid its eggs. This, however, is not so.

Fifthly, Parasites do indeed prove destructive to insects designed by nature to be their prey, but must never be assumed to become the cause of the destruction of the entire race—which would, in effect, be warring against their own kith and kin.

Sixthly, I have examined nearly a hundred bee larvae, "by holding them before the light of a candle in a darkened chamber," but could never detect the motions of a single phora larva.

Seventhly, Prof. Leuckart examined microscopically a great number of foulbroody bee larvae in the summer of 1860. Some were dead and some still living. He found neither phora larvae nor any other animal parasite in any of them.

Notwithstanding all this, it is my impression that foulbrood of the first and second grade or form, is at least occasionally, and probably more frequently than we suppose, caused by some parasitic insect, even though it be not the *phora incrassata*.

In the first place Dr. Asmusz has ascertained the presence of animal parasites in still living bee larvae from foulbroody hives; and as against clearly ascertained facts, I hold mere scientific inferential and negative proof as of small account.

Secondly, The minute holes observed in the caps of foulbroody cells, indicate that some living creature either there entered or came out of those cells. But of the fact that it comes out thence, I think I have conclusive evidence. In the summer of 1861, Mr. Henry Keil, a bee-keeper in Dettelstadt, near Gotha, brought to me a foulbroody comb from one of his hives. I examined it minutely, and observed small holes in the caps of seven of the cells. I then placed the comb under a glass cover, and on examining it again nine days after, found that the number of holes had increased to twenty-four. The additional seventeen, it is apparent, could only have been perforated from within and outwards. Nor could they have been produced, as Scholtiz supposed, by the bees, "in order to ascertain the contents of the cells after having in vain awaited the development of the larvae."

Thirdly, This view of the matter accounts plainly for the spontaneous occurrence of foulbrood in places where no obvious cause is known to exist. It is probable that the insect makes its appearance only temporarily and in limited areas, though occurring in greater or less numbers at different periods. This, too, would account for the fact that at times one or two hives are attacked in an apiary where no vitiated or noxious honey has been fed—a circumstance otherwise inexplicable.

SECOND VIEW.—Foulbrood may be caused by feeding the colonies with fermented or acidified honey. Fermentive matter, even though not derived wholly or in part from foulbroody stocks, would cause fermentation in the brood fed therewith and thus produce foulbrood. President Busch, however, states that he has often fed such honey without injury to his stocks. I have myself, in former years, fed tons of Cuban honey to my bees—honey having a nauseous, disagreea-

ble taste and smell—with no bad effect whatever. But this is inconclusive. That which was in ten cases harmless, may prove destructive in the eleventh. I think the positive evidence here shows that fermented or acidified honey can produce foulbrood.

Mr. Kalteich states that "honey combs of the previous year emitted a fetid odor, their surface was damp, and the pollen mouldy. I gave these combs to three populous stocks, all of which became foulbroody and perished; as did likewise a fourth, the bees of which had appropriated some of this honey and several others also, into which I had introduced such combs before I knew they were contaminated."

Mr. Hermann says: "In two instances foulbrood was produced by feeding bees with honey kept in a vessel in which verdegis had been formed."

Mr. P. J. Mahan, a highly intelligent bee-keeper from Philadelphia, told me when here that he had formerly spent some time on the island of Cuba, and had observed that it was a common practice in the apiaries there after suffocating their bees, to press out the liquid from the commingled mass of honey, pollen, brood, and dead bees, and run it into casks as the product of the bee. This nauseous mixture speedily undergoes fermentation, especially if the combs were not previously heated and contained much young brood, the rich juices of which readily ferment. Foulbrood is sure to be produced when bees have access to such food; and he knew of many instances in the United States where the disease originated from this cause, though it was almost unknown in Cuba. The bee-keepers there are well aware of the noxious quality of such honey, and are careful that their bees shall not have access to it. So long as this commixture, called Cuban honey, has not undergone fermentation, it may be safely fed to bees; and its pestilential quality depends entirely upon the fact whether the pressing took place when there was much unsealed brood in the cells. Usually the pressing was done when the combs were free from brood, but occasionally the want of empty hives to accommodate the numerous swarms, constrained them to be less particular in that respect. Bee-keepers in the United States, taught by experience, that Cuban honey was a dangerous kind of bee-feed, avoid it altogether, and would not accept it as a gift for that purpose. Thus far Mahan. Polish and other foreign honey of commerce, is of nearly the same character.

In corroboration of this view I quote also the observed fact that such honey does not directly, but only indirectly, produce foulbrood. It gradually contaminates the air in the hive, developing a fetid odor, and thus causing disease, which always breaks out six or eight weeks after the noxious honey has been fed. This is also confirmed by Dzierzon's experience, who made all his stock foulbroody in 1848, by feeding Cuban honey.

THIRD VIEW.—It is believed by some that if brood which has died from any cause, is not removed by the bees, it will become putrid and produce a contagious disease; that is non-contagious foulbrood may under certain circumstances be

come contagious. This, I conceive, is only too likely. In 1855, I discovered a highly fetid foulbroody hive in the apiary of Mr. Oscar Ziegler, in Schleusingen, which was forthwith condemned to the brimstone pit. Mr. Ziegler bought this hive in a neighboring village, and the bees were suffocated while it was being transported to his home. About eight days after a swarm was put in it, and thereupon the non-contagious foulbrood therein, immediately assumed the contagious form.

FOURTH VIEW.—The disease may be caused by noxious dews which sometimes occur while fruit trees are in blossom. This is a very old opinion. Hoffer said in 1660, "In some years the blossoms of trees are literally poisoned by dews and mists, so as to make bees sick." In a conversation with Dzierzon, in 1855, while he was on a visit to Seebach, he said he was inclined to accept this view. "I think," said he, "I have frequently observed this in my neighborhood, while fruit trees were in blossom. Foulbrood may originate thus, though to these noxious dews is attributed the disease more commonly known as *vertigo*."

However, were such the case, would not all the stocks within a certain range or circuit, be simultaneously and similarly affected? Hoffman-Brand states that in his foulbroody hives the pollen was slimy and apparently undergoing a kind of fermentation; which he ascribed to the noxious qualities of the dew.

FIFTH VIEW.—The fungus called *mucor melitophorus*, which is often found in the chyle stomach of bees, it is alleged exerts a deleterious influence on the preparation of the jelly, so that the brood is not furnished with a properly digested pabulum, and hence becomes diseased, dies and putrifies. The fungus is supposed to be thus the indirect cause of the disease. But, this fungus is often found abundantly in colonies entirely healthy; and Dr. Asmus never found it in bees of foulbroody stocks.

In addition to all this, we find many other conjectures presented in bee-books and by correspondents of the *Bienenzeitung*, none of which seem to have any solid basis. Mr. Kritz supposed that foulbrood may be caused by some unhealthy effluvium emanating from the bee-keeper himself. Dr. Alefeld thinks it may arise from a diseased condition of the sexual organs of the queen-bee. Semlitsch imagines it may result from the dust blown into the hives from the streets and highways. And even the position assumed by Director Fisher in an article on "the origin, nature, and cause of foulbrood," published in the Transactions of the Third Meeting of German Agriculturists in 1865, is of no account, being manifestly based on erroneous premises.

In fine, I believe, as I have already stated, that foulbrood, as it presents various phenomena and assumes various forms or grades, so it may arise from various causes. At present, however, we possess no tangible knowledge respecting it. Bee-keepers should therefore be careful to ascertain and note the facts and circumstances, whenever the disease comes under their observation. Nor should they be in haste to form or proclaim theories. Above all, they

should not neglect to submit foulbroody combs to the examination of some competent naturalist when practicable. I do not think it at all likely that inexperienced bee-keepers, unversed in physiology and unpracticed in the employment of the microscope, will ever advance us much in this direction unless aided by men professionally prepared to prosecute scientific investigations, to whom carefully observed facts would be invaluable. Only after ascertaining the true nature of the disease, may we hope perhaps to devise methods for its prevention and cure.

A. VON BERLEPSCH.

[For the American Bee Journal.]

Producing Fertile Workers.

I have been a reader of the *AMERICAN BEE JOURNAL* since the commencement of the second volume. As a whole, I am well pleased with it, and think it should be sustained by the bee-keepers throughout the United States. But there are sometimes positions taken, or theories advanced, to which I take exception. While there have been rapid advances made in apian science "in the latter days," is there not now much said and written in relation to bees, which is theory and theory only? We are very apt to "jump at conclusions." We sometimes find, in September or October, hives in which there are no bees, the combs destroyed and filled with vile worms and cocoons. In the spring the hive was populous, and has sent out during the summer one or two good swarms. If we knew nothing of the natural history of bees, we should at once attribute the loss of the colony to the ravages of the bee-moth, whereas, nine times in ten the destruction is really occasioned by the loss of the queen on her wedding excursion. The conclusion arrived at here would be very natural, but erroneous.

Are we not equally incorrect in some of our theories in relation to the natural history of bees? If a queen is removed from a colony, they will rear another from any egg or young larva found in the hive in worker comb, changing it from what would otherwise have produced an imperfect female or worker, to a perfect female or queen. If I understand Prof. Von Siebold correctly (see *AMERICAN BEE JOURNAL* for December, 1867), he claims that this change is effected either by the kind or the quantity of food consumed by the larva. Here is a position taken or a theory advanced; and founded thereon, or derived from this theory, whether correct or incorrect, is another, namely, "that by some confusion or disturbance in the regular distribution of the food, some of the royal jelly falls to the lot of one or several worker larvae in the neighborhood of a queen cell into which royal food is carried, by which their sexual organs are more or less developed."

After giving the first position here taken a passing notice, I will endeavor to show how any one, who feels disposed to take the necessary trouble, may satisfy himself as to the correctness of the second.

While we admit that the kind or quantity of food, or both, received by the young larvae, may

have much to do with the development of the sexual organs, thereby changing the nascent insect from a worker to a queen, may not the position of the cell also have some influence in effecting this change? The work of the bee is not in reality its own, but is that of an Allwise Creator, whose "wisdom is manifest in all his works," and who has given this interesting insect a natural instinct by which it is directed in its labor, and its work is perfect. When in a natural condition it makes few blunders, few mistakes, and performs but little if any needless labor. Yet if the change in the position of the cell is unnecessary to perfect a queen, there is a grand mistake made in the construction of every queen cell in the hive, as they are all changed from a horizontal to a nearly or quite perpendicular position. And if the partial development of the procreative organs of the worker is caused by its having, through some confusion in the distribution of food, received a portion of that intended for royalty, we at once discover that they have made another mistake, by mistaking a worker cell for a queen cell, and a worker larva for an immature queen.

I think a few experiments made with this object in view, will do much towards disproving the fertile worker theory here advanced. In order to be certain that our fertile workers were not reared in the vicinity of a queen's cradle, we will select a colony of native bees in a sash hive from which swarms have ceased issuing—say twenty days after the issue of the first swarm, and as early in the season as possible. We will now remove the native queen from this colony and introduce an Italian queen with one wing clipped, so that we can at any time identify her. We will also remove the hive ten rods from any other, to prevent bees uniting from neighboring colonies, from which swarms may issue later in the season. This should be done immediately after the issue of the first swarm, setting the young swarm on the old stand to catch the returning bees. The next spring, in May, or as soon as the hive becomes sufficiently populous to be able to spare a swarm, and before there are any queen cells constructed, we will take out the combs and look them over until we are satisfied that there is not a black bee in the hive, and that they are all Italians. If, on making the examination, we find the queen with the clipped wing, we are quite sure that no queens have been raised, and of course no royal food used in the hive since the introduction of the Italian queen. About the middle of a warm day, when the young bees are flying, we will remove the hive to a new stand several rods distant, and set on the old stand a movable comb hive in which are a few small pieces of comb and, unless forage is abundant, some honey. And the sooner to reconcile to their new home the bees that will return to this hive, we will give them a small piece of worker comb containing young larvæ: but before any of these larvæ have matured, the piece of comb containing them must be removed from the hive, or we may get our fertile worker from this brood. We will continue to form artificial colonies in this manner, as often as the parent stock becomes populous enough, until we have five or six of

them; each time looking over the comb to find the queen originally introduced, and to see that there are no queen cells constructed. In from three to six weeks after these queenless and broodless colonies are formed, we are almost certain to have in some of them, very likely in several, and perhaps in all of them, one or more fertile workers. Yet it will at once be seen that no one of these workers, when in a larva state, could even have tasted royal food, unless such food is used at other times than when queens are being reared, and this I believe no one pretends to be the case.

My first attempt at queen raising was made in the month of May, taking bees for this purpose from hives from which no swarms had issued since the preceding July. I commenced with nineteen small artificial colonies, and from various causes failed to rear a queen in any one of them, from the first Italian brood given them. In most of them I failed, in the first attempt, to get even a worker matured; and in several of them I had fertile workers before there was an Italian bee to be seen. I have since had such workers under similar circumstances, when I was quite certain they never had been fed royal jelly.

From the facts here given I am forced to the conclusion that, although the kind of food a larva receives may have an influence in the development of the generative organs of the future queen, we must look elsewhere for the cause of fertility in a worker. I know that to question the assigned cause of a certain effect produced, as given by another, without being able to furnish a more satisfactory one, is not a very desirable position to take; yet it is one which I am compelled to assume in the present instance.

J. H. TOWNLEY.

TOMPKINS, MICHIGAN.

The old-fashioned box hive and the hollow log with brimstone, are humane compared with the results of the first improvement, viz: top boxes, causing the loss of more colonies than our forefathers "took up." In the old plan bees were "kept over," and had all their season's store—almost invariably enough for winter. The improvement left it to the judgment of the owner how much to take, and he frequently took too much, and not only lost his swarm, but also all they consumed, which loss through the country together is very great. Unless judgment is used in depriving bees of honey, brimstone fumes are more humane than honey boxes, inasmuch as sudden death is preferable to lingering starvation.—E. Parmly, New York.

I do not think it right to advocate a system of bee management which allows or encourages persons to be comfortable in their ignorance and laziness. We ought to make such as uncomfortable as possible, so that they will find no rest until they are up with the present knowledge of whatever they engage in. The majority of beekeepers require instruction, and they can only get it practically and fully through the use of the movable comb hive.—E. Parmly, New York.

[For the American Bee Journal.]

Observations and Remarks on Bee Culture during the Year 1867.

The active out door labors of bee-keepers having terminated for the season with the approach of winter, they may now in their quiet homes review the occurrences of the past year, and discuss the topics which observation and experience have presented for consideration—various and novel as these have been.

Refreshing rains in the early autumn of 1866, which followed the long continued drought that prevailed during the latter part of the preceding summer, brought a variety of fall plants into bloom, and thus unexpectedly furnished the bees with somewhat abundant late pasturage. This led to renewed brooding in most of the hives, and caused a rapid and extensive reduction of the winter stores which had been garnered for the support of the colonies. Perceiving this and dreading the consequences, I took seasonable steps to prevent losses by uniting colonies that appeared weak, and feeding others that seemed inadequately supplied. Though the ensuing winter was very severe and the weather was unfavorable till late in the spring, I still had the gratification to find that most of my stocks escaped with slight injury. This, however, was not the case with those bee-keepers in this district who had prematurely removed and sold their surplus honey—on whose stands consequently many stocks perished. After my bees revived in the spring, I supplied them with flour placed in the neighborhood of the apiary, which was resorted to by them and appropriated with eagerness, so long as supplies of pollen could not be procured from natural sources.

About this time I observed that robbing bees were assaulting one of my weaker colonies. Ever anxious to avert and prevent robbing, I immediately examined this colony and found that it had a queen indeed, but was totally destitute of brood. I then resorted to the use of musk, coal oil, contraction of the entrance, disguising the hive, &c., without any beneficial result. Convinced thus that the assault had reached a point beyond remedy, I re-examined the hive and found that the queen had disappeared, and her place was usurped to some extent by a fertile worker. Resolved, however, to turn these robbers to good account and prevent them from proceeding to attack other colonies, I inserted inside of the entrance of the ruined stock a funnel-shaped card, having the interior opening only large enough to permit a single bee to pass, and elevated about an inch above the bottom board. The robbers could thus enter, but not readily find their way out again; and I gave free access to all that wished to explore the interior. At dusk I closed the entrance, and next morning carried it and its contents to an apiary about a mile distant, where I gave the prisoners liberty to fly. Soon discovering that they were in a strange neighborhood, they returned to their late prison, evidently constrained to regard it as their future home. I immediately inserted a small piece of brood comb containing eggs and larvae from an Italian stock, and was enabled to take

from it in a few days, several queen cells to be used elsewhere. In the fall, I found that this colony had secured sufficient supplies for the winter. But I was still more highly gratified to find that I had thus effectually checked the robbing in my home apiary. Spring opened late, but suddenly, and with such superabundant supplies, that all hands were kept busy in making the requisite preparations to enable the bees to appropriate the proffered boon.

At the close of April, I began to form nuclei and artificial colonies, and continued the work to near the end of May, in so far as the movable comb hives in readiness enabled me to operate. Yet at the usual swarming season, the bees, encouraged by plentiful pasturage, seemed seized with a perfect furor for secession, and the multiplication of colonies became a source of great annoyance, though I had previously endeavored to guard against much natural swarming. From many of the smaller and later swarms, I removed their queens, thus constraining them to return to their parent stocks.

On this occasion, I made the observation that the Italian bees are prone to swarm earlier than the black, and that the swarms issue more promptly and with less ado, besides keeping together more compactly while on the wing.

I might have increased my stock threefold, but a twofold increase is already more than I desire, as I regard an average increase of one-third annually quite as much as this district of country will warrant; and even then I resort somewhat to "doubling up" in the fall.

With the exception of a few of the earliest strong swarms, I am better pleased this year with artificial colonies, more especially as the latter seem more disposed to conform in comb-building to the prescription of their owner.

Haste, even in bee-culture, as in most other matters, makes waste, and should be sedulously avoided by every bee-keeper.

While pasturage abounded I used the opportunity presented to acquaint myself with the difference in the honey derived from various sources, such as the blossoms of fruit trees, locusts, lindens, and white clover. Among all these, that from the lindens, the odor of which was distinctly perceptible in the apiary, seemed to me much the best. For this reason the planting of linden trees, (the earlier as well as the later blossoming varieties), should be encouraged by every bee-keeper, wherever ornamental or shade trees can be introduced.

From the beginning of July onward pasturage rapidly diminished; and the want of rain, with drouth, soon constrained the bees to resort to their winter stores for support.

In the sudden change from abundance to scarcity, amid long-continued severe drouth, may probably be found the source of the difficulties which I experienced this year, in multiplying the Italian race, and more especially perhaps, of the interferences on the part of fertile workers. Have other bee-keepers made similar observations under like circumstances, in their apiaries?

Against apprehended attacks from robbing bees, I was ever on my guard, opening hives only early in the morning or late in the evening, when I had occasion to remove honey, insert to

queen cells, or introduce Italian queens. And in this regard also I found a second apiary, a mile distant,—established for multiplying the race in its purity—particularly useful.

The Italian bees obviously resist attacks from robbers much more resolutely than the common kind. But I certainly cannot say that they will not themselves rob, for I have frequently seen them in the front rank of the assailants.

As there was considerably less brood in the hives this fall, than at the corresponding period in 1866, the union of weak colonies to provide an adequate population for the winter, seemed evidently to be the proper course.

The yield of surplus honey was satisfactory. Notwithstanding the severe and protracted drouth which prevailed here, I could take twenty-five pounds on the average, from each of my older stocks. And here again I must say that the Italian colonies proved their superiority; for I was able to take from the older ones more than double the quantity just mentioned. When removing honey, it is ever prudent to deal liberally with your bees, leaving them ample supplies for every emergency, as the best possible place to keep your surplus stores is in the hive itself.

In view of the fact that bee-pasturage differs very much in different sections of country, and that it is desirable to furnish supplies for the bees at all times during the working season, or from spring to fall, bee-keepers should on all occasions encourage the introduction and cultivation of honey-producing trees, plants, and forage crops.

Espornette, or Sainfoin, is a very valuable species of clover, yielding honey in abundance, and supplying excellent fodder for horses and neat cattle. Repeated experiments, however, indicate that it will not thrive well in this region, though I shall persevere in my efforts to cultivate it. Probably it may be better suited to a more notherly climate. It would be gratifying to see our hillsides covered with this clover for cattle and bees, as are those of some portions of Germany.

I have also made some experiments with the culture of oil plants, such as the poppy, summer and winter rape, &c., but, alas, these likewise do not appear to suit our climate. Mustard and thyme are more promising, where they could otherwise be cultivated with profit; and it is such crops only that are likely to be successfully and extensively introduced.

Within the last thirty years, the *Melilotus leucantha*, white-flowered melilot, a species of trefoil, has been highly recommended in Germany for cattle and bees. On trial, however, it proved to be worthless for cattle, and the culture of it was consequently again abandoned. I found this trefoil in this country as a wild-growing plant, and known as *honey clover*. For the benefit of bee-keepers I have sown it in by-places and uncultivated spots, where it sustains itself, as cattle refuse to eat it. This species of clover was again introduced in Germany a few years ago, under a third name—*multicaulis clover*; but with no better results. The seed of *honey clover* was sent to France, from the United

States, by one of our enterprising seedsmen, and thence distributed under its new name.

Mr. Baldrige, of St. Charles, Illinois, in compliance with my request, kindly sent me a sample of *Melilot clover*; and it seems to me that the *Melilotus leucantha* is about to make its re-appearance among us under a fourth name, and seeking acceptance. This I am disposed to concede in a country the vast area of which allows of ample spaces not necessarily devoted to cattle pasturage; as I can corroborate what Mr. Baldrige alleges in its praise. Still we must be prepared to make allowance for the effect of difference in climate; yet if, as I now learn for the first time, that the cultivation of melilot combines other advantages besides contributing to bee-pasturage, it may deserve special commendation.

Let me add another fact from early observation in Germany. My father, who was a devoted friend of bees, had a large old Borsdorf apple tree near his apiary. Yearly, from eight to fourteen days before the blossoms of this tree opened, a drop of white sweetish liquid exuded from the buds, which was eagerly gathered by the bees, amid joyful humming. The benefit resulting therefrom was obvious, as numerous swarms issued about the beginning of May, and the weight of the hives frequently exceeded 100 pounds. The recollection of this impelled me to endeavor to introduce the tree in this country; and imported grafts have been set on several large apple trees. If the blossom-buds before expanding prove to be similarly productive of nectar, as those of the tree in its native home, I shall take pleasure in distributing grafts among bee-keepers. Has any such exudation ever been noticed on the blossom-buds of apple-trees in this country?

I once had the gratification to see my bees gathering honey plentifully from the blossoms of a large male honey-locust tree near my apiary, at dusk in the evening and till late at night.

In Germany, the bee-keepers of our commune were in the habit of consulting and advising with each other as to the particular crops each should grow, from year to year, for the benefit of bee-culture.

Let us persevere in our efforts for the improvement and extension of bee-culture, by interesting and instructing the rising generation therein—there is yet a vast field of observation and experiment unexplored to engage their attention.

By such continuous efforts even our hives have been gradually improved from the original gum to the movable comb, until the latter—particularly that of the Rev. Mr. Langstroth—have been brought to a high degree of perfection. Though bees feel small concern for the fashion of their hives, requiring only a sheltered home adapted to their wants, still it is an error to conclude, as some bee-keepers do, that our favorites had better be altogether uninterfered with. It can by no means be a matter of indifference to the intelligent bee-keeper of our day, what kind of hives he employs. He requires such as are suited to the habits and instincts of the bee, giving them adequate protection, yet permitting an easy inspection of the contents, and enabling him to control, to direct, and encourage their labors so

as to secure the utmost benefit therefrom—while at the same time combining simplicity, cheapness, and durability in their construction.

To be enabled to form a judgment from personal observation and ultimately make a satisfactory choice, as well as to afford others an opportunity to see hives of various construction in practical use, I have hitherto adhered to the chief forms of hive employed in Germany and in this country. This has undoubtedly proved a source of trouble in my apiary. I have in use four different forms of Dzierzon hives, though all constructed on one fundamental principle. I have increased the number of my double or twin hives, since I have become practically acquainted with the advantage they offer. Every desirable operation can be readily performed with them, and they can be enlarged or diminished, as the size of the colony therein may require. The condition of the bees and their stores may at any time be ascertained; and stocks can be wintered in them with entire safety, as I have satisfactorily ascertained, on two years' trial, by the preservation therein of several weak colonies with Italian queens. I found these in a very gratifying condition in the spring, with very few dead bees. I have improved this form of hive, by the introduction of a mode of ventilation, to counteract the excessive heat of our summers; and thus, I conceive, have better adapted it to the requirements of this climate.

I have also stocked six of Langstroth's improved hives with the earliest natural swarms obtained last spring; which have done well. So far as I have observed, I regard these hives as best devised among the numerous forms presented, and thus, in connection with cheapness, calculated to secure the approval of bee-keepers. As the lower part of these hives did not appear to me sufficiently thick so protect the bees from the effects of cold in our severe winters, I have covered this part with a layer of straw and cornstalks, from the bottom up to the projecting top—desiring to test fairly this mode of wintering.

I would remark in addition that I winter all my stocks, well protected, in the open air; entertaining misgivings as to the result of burying bees in this region of variable temperature, where heat not seldom suddenly penetrates in the ground. Burying bees, however, may be a very good mode of wintering in more northerly localities.

I have the satisfaction to state that of the complaints formerly urged, that bees are injurious to vineyards, by destroying the ripening grapes, we heard less last season, though the grapes were much sweeter than in previous years. The hard winter of 1866-67 destroyed large numbers of wasps, which were the real cause of the damage sustained; and an opportunity has thus been had to exonerate the bees of the calumny.

Let us now look forward joyfully to the revived activity of our bees in the coming spring, and trust confidently that we shall realize increased and compensating results from our common exertions for the advancement of bee culture.

J. MANGOLD,

HOME, NEAR CINCINNATI, DEC. 10, 1867.

[For the American Bee Journal.]

Curious Instances of Swarming.

Last June I put a very large swarm of bees in a new Farmer's hive, which had been prepared in the most approved manner, to make it acceptable to the bees. They entered it to the last bee, and appeared delighted with their new home. At dark it was removed fifty yards from the old hive. I examined them in the morning and saw them flying about the hive, going in and out, but not working. About one o'clock they all sallied out and settled on a tree, but in a few minutes left.

In a few days after, as my colored man was mowing a small lot of clover, a swarm of bees passed along, heard the rattling of an old mowing machine, and concluded to stop on a bush in the clover lot. He went to the house and got the same hive, which they entered, and at once went to work with a will.

In about eight days after, I had a large swarm settle on a small apple tree. I placed it with the stray swarm, and they have worked harmoniously ever since. I have known several instances where swarms of bees have settled on fence stakes. One last spring remained on a stake two days. A swarm was once known to cluster on a large clod in a plowed field. Last June a swarm of Italian bees clustered on the iron window shutters at the back of a dry goods store on Main street, St. Louis. After remaining there for some time, and attracting a great crowd, the porter of the store put them in a nail keg.

A bee-keeper of forty years standing informs me that he once, in Kentucky, saw a swarm enter a hollow tree and remain in it a few minutes, then come out and enter another, and there remain. But the strangest story he relates of the fickle capers of bees happened while he was travelling through St. Charles county, Missouri. A German was plowing corn, a swarm of bees followed after him, and stung his horse. The fellow, almost frightened to death, took his horse out and abandoned his plow, and the bees clustered on the handles. My venerable friend, the bee-keeper, sent the German to his home for a box, put the bees into it, and pursued his journey.

Instances of such waywardness are calculated to shake the belief that scouts are sent off before swarming to select a home. It may be so, but it does not accord with their general instincts.

J. S.

FLORISSANT VALLEY, Mo.

Answer to a Question.

On page 132 of the current volume of the BEE JOURNAL, APIS says—"It has been said that bees will not build combs on a painted surface." My experience is that they will. I have used painted frames when I wished to exhibit the combs built therein. Bees will build on a painted surface, on a smooth surface, on a rough surface, on tin, iron, brass, zinc, or any other metal. In fact, they will attach their combs to almost anything.

BROOKLIN, ONTARIO.

J. H. THOMAS.

[For the American Bee Journal.]

What every Bee-keeper ought to know:

That the life of a worker bee, during the working season, is only from six to eight weeks; and that a large majority of them never live to see seven weeks:

That a worker is from five to six days old before it comes out of the hive for the first time, to take an airing, and that it is from fourteen to sixteen days old, before it begins to gather pollen or honey:

That all swarms building combs when they have not a fertile queen, build only drone or store comb; and that all the combs in the lower part or breeding apartment of the hive, should be worker comb, except a very small quantity of drone comb—four inches square being amply sufficient:

That the more prolific the queen the more young bees you have, and the more surplus honey they will store up, other things being equal:

That you never ought to cut mouldy comb out of a hive, for you should never let it get mouldy; and that you ought never to double swarms in the fall, for you ought to attend to that, and make them strong during the summer, by taking brood from your strong stocks and giving it to the weak:

That a drone-laying queen should be taken away, and one producing workers put in her place, or the colony must soon perish:

That, as a rule, as soon as an Italian queen shows signs of old age or feebleness, the bees themselves will supersede her:

That all stocks should be kept strong in order to be successful.

That every hive should contain about 2000 cubic inches in the breeding apartment,

That it is useless to put a small swarm into a hive of that size, without a division board, or some contrivance to adapt or bring it down to suit the size of the swarm, and to enlarge it as the population increases: (Give me one pint of bees, a fertile queen, and a frame filled with maturing brood, on the 20th of June, and I will, in an ordinary season, make a tip top swarm in the hive I use, without assistance from other swarms):

That beginners should be very cautious about increasing their stocks rapidly, until they thoroughly understand the business:

That the hive itself is all the bee-house you want in the summer season:

That a good dry cellar is as good a place to winter bees in as you want:

That a forced or artificial queen started from the egg or larva, in a small nucleus, is not as prolific as one started in a strong swarm: (You can remove the cell to a nucleus after it is sealed up):

That extra queens should be kept on hand, ready for any emergency; because, if you discover that a swarm has lost its queen, and you supply it with eggs to raise one, unless you keep strengthening it with brood from other swarms, eight weeks will elapse before the workers raised from your young queen will be ready to go to work—and eight weeks is the lifetime of a worker bee, in the working season. If you doubt

that eight weeks is the lifetime of a worker at such season, take away a black queen from a black swarm and introduce an Italian queen. In three weeks your last black bee will have been hatched, and in eight weeks from that time your swarm will consist of Italians exclusively, provided the exchange is made on or about the 20th of June. (See then, what you are to think of a patent hive with ever so many contrivances for taking away honey, but no place to raise bees to gather that honey):

That it is bad policy to divide a swarm in such a way that one part has to raise a queen after the division is made; for if they build comb, it is drone comb; and if they do not build comb, as fast as the brood in the old comb hatches, the cells will be filled with honey; so that when your young queen is ready to lay, there is no place where she can deposit her eggs. The consequence is your swarm will be strong in stores but weak in numbers in the fall, unless you exchange combs with some other swarm:

That you ought to give your bees flour (some say rye-flour is best, but I always use wheat flour), in the spring, before they can gather pollen, to promote early breeding. Set it in the sun, out of the wind, near your bees. A square board with strips nailed around the edges, is as good as anything to put it on. Ten swarms will use from three to four quarts per day:

That bees do not feed this flour or pollen directly to their young; but it is elaborated in the stomach of the bee, on the same principle that a pigeon eats corn, wheat, &c. and elaborates it into chyme or milk to feed its young on, before it is six days old:

That you must feed bees just at night, if you feed honey or any other sweet to promote breeding, and thus prevent robbing. Or if you exchange combs in the spring, to equalize their stores, it should be done just at night:

That if you allow natural swarming, bees may swarm so low as to ruin the old stock if not attended to. It frequently happens that where a stock sends out three or four swarms in succession, the last queen goes with the last swarm and leaves the old stock destitute:

That it is not necessary when a swarm comes out, to allow them all to cluster before hiving, as soon as a part of your swarm has lit, hive them, and the remainder will go right into the hive:

That a newly painted hive, if it has been painted long enough so as to be dry, is as good for use as one that has been painted six months:

That because you may be fond of whiskey, it is not necessary to sprinkle the inside of the hive with whiskey, in order to have the bees stay. I once knew a man to do so; and, strange to say, they actually did stay:

That if you put one drop of Prof. F's Bee Charm on your right ear, it will prevent the bees from stinging your left heel—provided you keep on your boots, and do not let the bees get inside of them.

E. GALLUP.

OSAGE, IOWA.

A warm, calm, and showery spring causeth many and early swarms. But sudden storms do hinder them.—BUTLER.

[For the American Bee Journal.]

Water for Bees.

Water is a prime necessity for bees, as well as for other animal systems—constituting the major part of their weight and substance, the medium of nutrition, secretion and excretion. The air is the medium of distribution, holding immense quantities suspended. All creatures imbibe water by the breath and absorbents, the different proportions in the air making the difference between the lean and dingy Arab and the plump and fair-skinned Englishman.

Condensed vapor is necessary for the bees in winter, for the air is then drier; and when they breathe less they must drink more. This is obtained by eating more honey and breathing more air, generating more heat and water. Upward ventilation is always and entirely wrong, because it lets off the heat—thus compelling the bees to eat and breathe more, generating more water, while the cold checks perspiration, feces accumulate, and dysentery is the result. Two small swarms together consume no more than one, and generate no more water because they are warmer. But put them in a narrow circular cavity, with solid walls, surrounded with bark and lined with dead wood, and they will generate no more water than they need.

The bee has existed since the dawn of creation, and under the protection of an unerring instinct has outlived those changes and convulsions that have destroyed other races, and extended its range from the equator to the frozen regions. But man, comparatively a creature of yesterday, comes upon the scene, and though he has the same reason to believe that the bee and the hollow tree were made for and adapted to each other as the bird and the air, or the fish and the water, he tells us that the bee has been suffering and languishing before the advent of man, for want of upward ventilation in winter, and a little water on a sponge occasionally; and if they had had the upward ventilation they would not have suffered in the spring. Thus, though he knows nothing of matter except its phenomena, he decides in the bloom of his self-conceit, the antiquated plans of the Deity to be a failure, which ought to be set aside in this enlightened age.

We know that instinct varies with climate, anticipating and providing for irregularities in the seasons; and it would seem that the Deity should have discovered these triumphs of human wisdom, and cease to impress on the passing generations of the bee that mulish obstinacy which causes them to fly away from the glorious inventions of man to "a miserable home in the woods."

I differ from apiarian writers of ripe experience, eminent for natural and acquired abilities, to which I make no pretensions. But upward ventilation is inconsistent in theory, expensive and dangerous in practice, condemned by instinct, at war with facts, and a bald denial of the wisdom and goodness of Deity. F. H. MINER.

LEMONT, (ILL.)

After a moist spring, when swarms are most plentiful, is robbing most rife; otherwise there is less danger:—BUTLER.

[For the American Bee Journal.]

The Egyptian Bee.

EDITOR BEE JOURNAL:—Many of our correspondents are calling our attention to the clause in our circular for 1867, in which, speaking of *Apis Fasciata*, commonly termed the Egyptian bee, we say—"We can speak warmly of their great beauty and will give the public our judgement of their relative value, when we have subjected their claims to a thorough test in our climate." It seems to be expected that this report can now be made. Owing to a peculiar combination of circumstances such is not the case.

We received in November, 1866, two distinct importations of these bees. Their coming had been delayed until we had given up all expectation of their arrival that season; and we had consequently no colonies prepared for the reception of the queens. They arrived late in November, and it was several days later when they reached our apiary. The weather was unusually unfavorable, even for December; and some of the queens perished from exhaustion long before they could be introduced. Others were not to be found when the stocks to which they were introduced, were subsequently examined. As our order for another supply of queens raised in 1866, and thoroughly tested, had already gone forward to the Berlin Society of Acclimatization—the queens to be shipped in April, 1867—we still hoped to be able to breed and test this variety last season, though we returned all monies received by us on order for Egyptian queens. But we found it impossible, although having a personal agent in Europe, to expedite matters in the least. Herr Vogel, who breeds these bees for the Society, was absent in Egypt during part of the season, and we did not succeed in getting our importation of 1867 in time to breed from them to any extent last fall. We are therefore able to say little more about *Apis Fasciata*, from personal knowledge, than we could have done a year ago. Those apiarians who are expecting a report from us, in regard to the merits or demerits of this variety in any or all points, must consequently await the results of another season's operations.

L. L. LANGSTROTH & SON.

OXFORD, BUTLER CO., OHIO, JAN. 1, 1868.

Bees may have too much honey to winter well. Mr. Cary says bees will not winter well in solid honey. There must be a fair number of open cells for them to cluster in and keep their heat, by being in a compact mass. When the cells are all capped they must necessarily occupy more than double the space, and cannot withstand extreme cold weather. Mr. Cary also observes that bees do better in a dairy region than where large numbers of sheep are kept. Sheep eat very close and consume clover heads and flowers that cattle would leave; thus the bee is deprived of food. There is a marked difference he says, in some parts of the country, where the farmers have changed from cattle to sheep husbandry.—E. Parmly, New York.

[For the American Bee Journal.]

The Italian Bees at Home.

Reading the first volume of the "American BEE JOURNAL," I found on page 213 a communication to the *Bienenzeitung*, from F. A. Deus, who, in company with three other members of the Apiarian Convention held at Mayence in 1866, made a tour through part of France, Switzerland, and Italy, after the adjournment of the Convention. Mr. Deus notes particularly the various places, on their route, where Italian bees occur, and describes their appearance. The close of the communication reads as follows:—

"At Lago Maggiore and Lago di Como, we found Italian bees exclusively, and of the most perfect type, like those of Genoa. These districts, indeed, appear to be their chief *habitat*."

Does not this report agree with Prof. Mona's certificate and my account of the native *pure Italian* bees? It is here likewise, in this region of country, that the Italian bee was found *exclusively*. But I fear that this report will be regarded as of no account, in opposition to Prof. Varro's *ipse dixit*.

On page 2 of Dathe's pamphlet, Dr. Ziwan-sky is quoted as saying—"We may the more confidently decide in favor of this source (of procuring Italian queens), inasmuch as no black bees whatever are found in the entire Canton, (Tessin), and we may therefore feel assured that we shall obtain thence no other than bees of the genuine and pure-blooded race."

But Prof. Varro is acquainted, from his youth, with a man who has seen Italian bees in Italy too; and because he had seen Italian bees in their native clime before Mr. Uhle or I saw Italy, there must be black bees found in that region of country.

JEFFERSON, (WIS.)

ADAM GRIMM.

Interference of Common Drones.

In the February number of the BEE JOURNAL, (page 160,) the question is asked—"Can Italian bees be raised and kept pure in a location where black bees are abundant?"

I will tell you what I know about the matter.

In the summer of 1866, two of my stocks were partly hybridized—about ten or twelve per cent. having one bright yellow ring.

The queens in these two hives produce hybrids in about the same proportion, not having swarmed last summer.

Now, I have no Italian bees, nor was there at that time an Italian stock within a circle of five miles from me. Mr. Clark, living five miles southeast of me, had in 1865 an Italian queen leave and go to the woods with a swarm, going in a due west direction. If they continued in that direction for a distance of four miles, they would strike a point four-and-a-half miles south of me. Perhaps one half of this distance is woods; the other half cleared land. Now that was the only chance for my queens to be fertilized by Italian drones.

I keep from forty to fifty stocks, all black bees. Why are no. all their progeny hybrids? That is, the progeny of those two queens.

I wish you would tell us how to feed bees in the Langstroth hives.

I wish all persons writing in papers would put their name and location to their articles. The reason for wishing this is, I saw in a paper a very good article on bees, wherein the writer says he has good success in feeding bees with an invention of his own—with no name but correspondent of N. Y. Rural.

J. W. HUNTER.

PIQUA.

[For the American Bee Journal.]

The Bee Journal.—Foulbrood.

The February number of the BEE JOURNAL is received, and I must say that it is to me the most interesting number that has appeared. I am pleased to see each number steadily improving in interesting *practical* information for bee-keepers. If your readers do not get the worth of their money, *it must be their own fault*.

The first article in the present number, which treats in detail on the character and treatment of *foulbrood* is alone worth the cost of a complete volume. To many readers, if they will study it well, the information is richly worth \$10, and may be worth \$100. I have had several years experience with *malignant foulbrood*, but have had none since I came West. My apiary in Western New York, where I lived prior to 1861, was nearly ruined; and I know of several apiaries in that section, that were entirely destroyed. It requires the utmost vigilance to keep it in abeyance, and to make bee-keeping profitable where this disease is fairly established. I have had so much experience with foulbrood that I am satisfied; and will have no more of it, so long as there is a section in the United States to be found where it is unknown. I hope it will not be introduced in the West; but am fearful it is already in some of the apiaries in Iowa. The shipping of Italian bees from apiaries where the disease is established, throughout the length and breadth of our land, will be the means of introducing it into many parts of the country, if any thing will.

M. M. BALDRIDGE.

ST. CHARLES, ILL.

THE large Rhododendron, Mountain Laurel, or Rosebay, yields honey abundantly, but of a deleterious and poisonous quality, though not injurious to the bees themselves. During the period in which it is in bloom, in June, bees should not be allowed to store honey in supers, where this plant abounds; and combs containing such honey should be retained in the hive for winter supplies. This can be easily accomplished, where movable comb hives are used. Honey derived from the Kalmias, (common and dwarf laurel) should be treated in the same manner.

[For the American Bee Journal.]

How I became an Apiculturist!

I was born in France. My father, a country physician, sent me when six years old to my grandfather, a locksmith, in the city of Langres, for my education. There, during nine months in each year, while pursuing my studies, I was between school hours in daily intercourse with the workmen and learned to handle their tools. And during my vacations—two weeks at Easter, and eight in September and October, I enjoyed country life. The handling of mechanics' tools was afterwards of great service to me, enabling me to manufacture the various hives which I found described in bee-books, and in treatises on grape and tree culture. Much attention was given to those subjects, and my father's garden was well stocked with trellises and espaliers.

Yet, in all the country nothing was so attractive and pleasing to me as the sight of a neighboring hive of bees; so that I sometimes spent hours in watching their labors. Of course it was impossible for me to examine the interior of their home, but the matter only became the more attractive the more mysterious it seemed.

Knowing my predilection for bees, the old pastor of the parish sent for me one fair day in April, under the pretext that he wanted me to assist him in pruning his hives; but really to afford me the enjoyment of seeing the internal arrangement of the hive, and to treat me afterwards to a good slice of bread, thickly spread with new honey fresh from the combs!

Muffled up, according to the fashion of that day among bee-keepers, in a coarse linen blouse provided with a visor of heavy and coarse meshed wire cloth, sweltering under the unaccustomed and inconvenient costume, we had already pruned several hives, when the pastor's servant introduced in the garden a man asking for her master. He proved to be a young butcher, who was to be married next day in a neighboring village, and called to obtain from the parish pastor the nuptial consecration and the confession billet which he was required to exhibit. "Well," replied the pastor, as soon as he had unmasked himself, "I will give you the billet; but do not approach so near the bees, or you may get stung." "Don't care," rejoined the butcher, "as I kill oxen, I need not fear flies." Accordingly as soon as a hive was inverted, he would bend forward with his head over it. The old pastor, skilled for years in bee management, had so cautiously handled the bees that all the hives, save one, were pruned without accident. The last hive was now inverted and the butcher as usual examining its interior, when either by way of a joke, or because he was wearied of being thus annoyed in his work, or perhaps vexed that a sheep of his flock should treat him with so little reverence—or possibly incited by all these motives together, the old pastor struck the hive lightly, as though inadvertently, with his pruning knife. Instantly I saw the butcher drawing mutely from his forehead a stinging bee; then another from his cheek, and a third from his chin. At last, vanquished by the bees, he fairly ran away, shouting—"Ah, les mastives! (Ah the dogs!) they are worse than oxen!"

We were told that, next day, when, arrayed in his wedding suit, he called on his bride to lead her to the church, she at first refused to recognize him, so much was he disfigured—his very voice, modified by his swollen lips, was totally changed. Returning to the city some days after this, I narrated the butcher's experience to my schoolfellows. Thenceforward, for months, "worse than oxen!" was the rallying cry of my playmates, just as "Ohe, Lambert!" is that of the cheerful lads of Paris.

On my return to the country, the following September, a pretty swarm in a bright straw hive was, to my great joy, installed in the lower part of my father's garden. It was a fine after-swarm, presented to me by the old pastor. As that year had been very favorable for bees, one half of the hive was already filled with combs. Searching immediately in the old library, purchased of his predecessor, I found several books on bees. Some of them reproduced all the errors I credited since the days of Pliny and Columella; but happily there were also, pearls among rubbish, Huber's immortal works, and a manual on bees presented to my father by his compatriot M. Lombard. Educated in Langres' liberal school, I was little prepared to take on trust all the whims and predjudices about bees, contained in the books. Hence I resolved to repeat fairly a part of Huber's experiences. But fearing to displease my benefactor, the old pastor, who believed that a disturbed swarm was sure to perish, I contented myself with watching daily the busy flight of the industrious bees, happy with their happiness, and dreading to find them dead whenever the cold prevented them from flying out. Very reluctantly did I part with my swarm on the first of November, to return to school, bringing with me my bee-books, and leaving my hive well protected by an ample straw cover, and well supplied with bees and honey.

During the following winter, I purchased with my pin-money, some boards and with the aid of an old carpenter, a friend of my grandfather, I constructed two Huber leaf hives. These I took with me the next spring to my father, urging him to put in them my one or perhaps two expected swarms. But I had not taken the old pastor into account. He was sure the bees would never thrive in such wooden hives. My father, following his advice placed the only swarm I got that year in a common straw hive. But, alas! that was not the worst of it. My father sent his carriage for me in August, informing me that a waterspout had the day before thrown down five large stone houses in our village, and half-drowned my good friends, as he was accustomed to call my bees. Indeed on my arrival my heart was distressed at seeing the lower villagers engaged, among scattered ruins, in washing their clothes and furniture, soiled by immersion in the yellowish water.

As for my swarms, they were both half dead under a pear tree crushed down by an overthrown wall against which it had been trained. Neither Huber nor Lombard had foreseen such a case, and I could not learn how to save them. They perished in the ensuing winter.

Such was my first step in bee-culture. If you

and your readers are not wearied with the narrative, I will give an account of my second attempt in your next number.

CHARLES DADANT.

HAMILTON, ILL. JAN. 1868.

[For the American Bee Journal.]

Evaporating Nectar.

Some bee-keepers hold that bees gather honey from flowers and deposit in the cells immediately, and if the hive is patented on purpose for evaporating honey, or the watery parts of it, it evaporates of itself, and when thick enough the bees seal it up, &c., &c. Query, how did the bees get along before these excellent contrivances were patented for them? Well, that is just what I am going to tell you, for I never taught my bees any of those patent tricks.

When bees gather honey, maple sap, or any other watery sweet, more than their honey sacks can contain, they deposit it in the cells until evening, and then they hang in festoons or clusters in the hive, each one in his place—that is, one below the other, each one's trunk or proboscis clear when extended, so as not to touch another bee or anything else. Then by their great roaring, humming, or whatever you have a mind to call it, they create a great degree of animal heat; their sac is filled with this liquid, which is then blown out to the end of the trunk, stirred over, and drawn in again to warm up. This process is repeated until the liquid is sufficiently evaporated to be deposited in the cells and sealed up. Take a short straw in your mouth and blow a drop of water gently through it out to the end, and then draw it in again, and you have an idea of the process, all except the stirring up. The bees do that part better than you can, because they have tools made on purpose for that business. "Well, Gallup, that can't be," says an objector, for I have kept bees, my father has kept bees, and my grandfather kept bees, and we never saw any such thing." Your argument is a good one, for it is the very argument used by an old grayheaded man not long ago to me at an agricultural fair, to prove that there is no such thing as a queen bee! (Many a night have I lain beside an observation hive till 12 o'clock, watching the little fellows in their labors). This process goes on through the day also; but there are so many bees then out in the fields gathering, that it does not go on near so rapid. A swarm that is gathering honey very slowly will not show any of this process. You will be most likely to see it going on when the bass-wood is in full bloom. Enough on this subject at present.

Do you know that the Italians eat candied or granulated sugar, which the black bees refuse? That is another good quality. They will even go into your sugar box, and eat dry sugar, if you let them.

I am anxious to know whether Mr. Grimm arrived with that hundred queens all right. Let us hear from you, friend Grimm, through the BEE JOURNAL.

ELISHA GALLUP.

OSAGE, IOWA.

[For the American Bee Journal.]

Another Singular Case.

MR. EDITOR:—On the 10th of May, 1867, I deprived an Italian colony of its queen, and on the 20th of that month I examined it and found it had constructed twenty or more queen cells. Some of these I carefully cut out and inserted in common colonies, having previously abstracted and destroyed their queens. In examining one of these colonies a few days afterwards, I found that its young queen had emerged from the cell in a natural way; the cap of the cell having been displaced and its edge uniformly smooth and horizontal. I now regarded this colony as being in possession of a young Italian queen; yet I was somewhat astonished to find a queen cell of their own construction capped over, within a couple of inches of the cell which I had inserted. As this cell was, however, situated near the edge of the comb at the bottom of the hive, where the young queen was not likely to frequent, I supposed it had been overlooked by her in her search for royal cells, and as I could not see any other in the hive (common box hive), I concluded to destroy it and await further developments. Some ten days afterwards, I examined this hive again, to see if all was well, when to my surprise, I could see no brood or sign of any. I therefore supposed that the young queen had got lost on her aerial excursion, and I forthwith introduced into the hive a young, unfertile, bright yellow Italian queen, rather below medium size, and somewhat feeble in its deportment. I then awaited the elapse of ten days or two weeks, when upon examination, I found considerable brood in the comb; and after the lapse of still greater length of time, I had the pleasure of beholding both in and out of the hive, as bright and pretty Italian bees as I ever saw, all three-banded, without an exception. About the 15th of August, I proceeded to transfer this queen to another hive, which I wished to Italianize, when lo! not a larva or brood in any stage of development was to be seen in the cells. I however removed the queen, but had to wait ten days before I could get another ready for introduction. Then once more to my astonishment, I found in this same hive, any amount of brood capped over. But the strangest thing of all was, that after waiting till some of the brood would hatch, that I might test their purity by their color, I discovered that they were black bees, without a trace or sign of Italian blood in them. I then went to work and drove out a black queen, without a shadow of doubt as to her purity. This hive stood three feet from any other hive, on a separate board, by itself. Now, Mr. Editor, two questions present themselves here, which I would like you or some of your correspondents to answer. The first is, where did this black queen originate, and how came she there? The second, Why did the young Italian queen cease to lay so soon?

JOHN L. McLEAN.

RICHMOND, JEFFERSON Co, OHIO.

[For the American Bee Journal.]

Oats for Bee-Feed!

Yes, oats for bee-feed! Why not? Does any one doubt that oats contain the proper nutritive element for bringing forth and sustaining animal life? Of course not. But are bees to eat them? Well, kind reader, as the process is a *little* different from the manner in which we feed them to our horses, if you will be patient, we will try and tell you how we first got in the way of feeding our bees on oats.

In our earlier researches we were quite captivated with the idea of feeding our bees on rye meal; and of course our first transferred swarm had to have rye meal along with the other favors we heaped upon them. Mr. Langstroth, in his book, recommended it, and as we did not wish them to be destitute of any of the *necessaries* of life, we bought fine rye flour from a feed store, the nearest thing we could get to rye meal, and poured a lot down on the front portico of the hive, expecting to see them rush out and devour it like a lot of famished pigs. But they did not! And as they seemed determined *not* to touch it, we put it in the entrance, so that every bee, whether he would or not, must have some of the very essential rye flour. After having thus eased our conscience by thinking that we had certainly done everything proper, we left them until evening. When we first came home, as usual we had to look at our bees, and were surprised to find a considerable number "lying around loose" in front of the entrance, looking woefully white and dispirited. On opening the hive (which we usually did every morning, night and noon), we were met by about as sorrowful a looking set of floury miller-like sentinels as can be imagined.

Talk about throwing dust in one's eyes! Our bees looked as if they had all the dust they would need for a life-time; so we brushed the rest of the stuff away, and took a further look at our bee books.

We finally learned that we must wait until spring to have our bees reap the grand results of the meal feed; so our meal was carefully put away. Spring came at last, as it has a habit of doing usually, we believe; and we resumed our experiments.

We put the flour *on* the hives, *in* the hives, *away* from the hives, mixed with honey, yolks of eggs, and every way we could think of; but they would have none of it at all. We put it in a linen bag over the frames to keep them busy on rainy days, as the first volume of the BEE JOURNAL recommended; but not a meal would they touch, and we were obliged reluctantly to let them have their own way.

The second season so much was said of the advantages of rye meal by all, Quinby, BEE JOURNAL, and rest, that we felt as if our bees *must* be learned to use it too. And hearing some one remark that a scientific old farmer used to grind oats for his bees, we decided that we would try oats; and accordingly astonished the miller by ordering a bushel of oats and the same quantity of rye to be ground up fine, but left unbolted, to feed bees! Our grist was sent

home, and with some misgivings we put a broad board on the top of a barrel a rod or two from our apiary, sprinkled on the meal, and told our friends that from a recent discovery in chemistry it had been shown that the above mixture possessed essentially the same properties and elements of the pollen gathered by the bees from flowers, and that they—the bees—would appropriate it accordingly.

Now, Mr. Editor, don't you think it was consoling to our feelings, when upon coming home at noon, we found hosts of bees hovering over, dabbling their feet into, and rolling up balls of this artificial pollen, as happy apparently as if they were in a clover field in June? Didn't we cry "Eureka!"

From that time until natural pollen could be got, we fed them about *three pecks*, and our apiary then only comprised about a dozen hives. The swarms that were busiest, and amassed the most, were by far our most productive stocks, and one that particularly excelled all the rest, was the stock and swarm that produced the 117 pounds of box honey mentioned last fall—the swarm collecting thirty pounds in two days.

We are making preparations now to have plenty of the oats and rye ready, just as soon as the bees begin to fly. Hurrah, for the tons of honey we are going to have this year. You know, Mr. Editor, that Giantess is going to help after we get her home. By the way, will you please to thank Mr. Gallup for his kind article on page 150. The tree is so large, we shall have to run the risk of cutting it in April, as he suggests. After cutting down a tree of such height and transferring, will all the bees find the hive, especially if the queen happens to be killed?

We were going to sign ourselves Novice, as usual; but as every one knows that, we will omit it, and say,

NOVICE,

*with all his old enthusiasm, and impatience
for the arrival of spring.*

P. S.—A friend who is jealous of our great discovery, says that's a "big yarn" about the bees eating three pecks of meal. He says the neighbor's chickens flew up and ate it, and the wind blew it away. You don't believe him, do you, Mr. Editor?

By no means, for the Baron of Berlepsch assures us that in the spring of 1857, the 103 colonies then constituting his apiary, carried in 354 pounds of wheat flour. His colonies were poor in stores, and he supposed that between 300 and 400 pounds of candy would be required to sustain them till they could gather honey. But after furnishing them with flour, they drew so sparingly on their stores that only *eleven* pounds of candy were needed.—ED.

In their labor and order, at home and abroad, bees are so admirable, that they may be a pattern unto men, both of the one and the other. For unless they be hindered by weather, weakness, or want of matter to work on, their labor never ceaseth.—BUTLER.

[For the American Bee Journal.]

Experience in Italianizing.

BY ANOTHER NOVICE.—No. 1.

MR. EDITOR: By request of a bee friend I propose (if it will not crowd out more valuable matter from the JOURNAL), to write part of my experience in Italianizing. After having gone through a series of dear-bought experiments, and being now able to manage bees successfully and with ease, I pretend to be nothing more than a novice still.

I think it the duty of all those engaged in the business, to communicate to the JOURNAL, the results of the most interesting and scientific part of their experience. By so doing they may facilitate advance in a fascinating branch of rural economy, and thus make it easy for thousands of families otherwise favorably situated to manage bees with ease and success.

I begin with the finding of the queen. By the way, I can now find a queen with ease, in from three to fifteen minutes, with but few exceptions. But my first attempt was long, ludicrous, and somewhat singular. Yet, if my experience was valuable to myself, it ought to be still more so to beginners; and I hope it may be the means of saving thousands from a like mishap.

In July, 1866, I received notice from Mr. Quinby that the two queens, which I had ordered for myself and a friend would be shipped on the 18th. Intending to introduce on the ten days' system, I went at once to remove the old queens, so as to be ready to introduce on the arrival of the queens.

On Saturday afternoon, I began my search for the queen. Having never hunted for one before, I felt it a very hard task, as the reader will soon see. I had previously carefully consulted Quinby and Langstroth, so as to facilitate the undertaking. But a singular occurrence took place, which I am yet unable to account for, and which was the cause of all the trouble; and the loss, moreover, of the queen which cost \$7.50, including express charges. I searched carefully a frame at a time, spending almost ten minutes on a single frame; then set them in an empty hive to keep out robbers, spreading a cloth over. I may state, in passing, that I used Quinby's Improvement of the Langstroth hive, with eight frames. I noticed a cluster of bees on the bottom board, about the size of a dollar. Supposing it to contain the queen, I lifted it out on my hand, disengaged the bees, and found a real queen; but she was just alive, and died in a few minutes. Her abdomen had shrunk up, so as to make me doubt whether she was a queen; though otherwise, she was just the size and shape of a queen. I had seen and handled a great many before. The bees clinging to her as I carried her to the shop, confirmed me in the opinion that I had the queen. Being satisfied, I then gave up all further search.

The following Monday I went to help my friend remove his queen, and found her after a long search of near 2½ hours. Upon comparing

her with my dead queen, we concluded that mine was not a queen—her abdomen being a good deal shorter. I engaged him to come next morning and help me to hunt my queen. He came, bringing his dead queen with him, she having died the night previous from exposure. Upon comparing her with mine, they were exactly the same size, the abdomen of his having drawn up in death precisely like mine—further search was given up, being satisfied I had the queen.

The following Saturday the Italian queens arrived all right. In the afternoon, just eight days from the removal of the supposed queen, I went to look up and remove the queen cells, in order to introduce. But, to my surprise, not a queen cell could be found. I never felt more bothered what to do. Should I hunt for a queen when there was none? Or was there really a queen in the hive? Did they have two? I spread a cloth over, to keep out robbers, till I consulted my bee-books. Every book was against me, and in favor of a queen being present. So I went to work and searched near four hours in vain. Half the bees went under the bottom board, during the search. I left them to come out and enter the hive at will, not dreaming the queen was with them. Next morning, finding them still there, I tried to dislodge them with a brush; but they obstinately refused to enter the hive. I left them and went to meeting, supposing they would all be in the hive on my return. Returning about sunset, I found them still there. Now was my time to have secured the queen with the utmost ease; but I had that to learn by dear-bought experience. Knowing no better, I set the hive on a new bottom board; removed the old one with the bees under it; set the new one on its place; and then poured the bees down at the entrance, which they all entered immediately.

This case so bothered me that I sent for a friend five miles off, who had some little experience in introducing queens, to come and help me. On my way from the polls next morning, I met another who had a little experience. He was riding my way and stopped; but was too sick to do more than to examine a frame, and see they had a queen. He said there was every sign of the presence of a queen. After he left I commenced the third search, but had not gone far before I found a good many queen cells the size of an acorn shell started. I then stopped, supposing they had just started these cells, and that as I was to introduce my friend's queen the next day, I could learn more about it by seeing how it was done in his hive. There I found eleven queen cells mostly sealed over, which I removed, and then introduced the queen successfully. Next day I went to see how my bees got along with their cells. Instead of being larger, as I expected to find them, they had not improved a whit; on the contrary, some of them were being cut down. It then struck me that these cells were started during the twenty-four hours the queen was under the bottom board. Being now convinced that they had a queen, or, I might say another queen, I determined to find her that day if she was ever to be found. After hunting in vain until the sun got hot, I

divided them into three parts, to rest till towards evening, taking the precaution to keep out robbers. Went to the renewed task about half past three in the afternoon, and the queen was found just as it was still light enough to distinguish a big bee from a small one, and in *twelve days* from the time I commenced!

If the reader will pardon this lengthy detailed account of the search for and finding of a queen, I will tell something better in my next.

P. S.—The above colony had not swarmed that season. How do you account for the presence of two queens, or was I mistaken?

LOWELL, KY.

A.

☞ We think you were not mistaken. There were doubtless two queens present in the hive—which may be accounted for, by supposing that the bees had reared a young queen, and were actually engaged in superseding the old one, when you began your preliminary operation for Italianizing. The expiring queen found enveloped in a cluster of workers, explains the seeming anomaly.

[For the American Bee Journal.]

Bees in Hollow Trees.

MR. EDITOR:—I saw in a late number of the JOURNAL an inquiry to which an answer is desired. I am no correspondent of any paper, nor a practised writer, but a plain matter of fact man, and may be able to give some information with regard to bees located in the top of a tree, and offer some suggestions how to get them down, as I have had considerable experience in such matters. Hence I propose to tell how I would get *Giantess* down, and our friend can judge whether it will *pay* or not.

For some time I have been very successful in hunting and finding bees, and then taking them down in the log. I always considered it hard and barbarous to fall the tree, and thus destroy the bees and lose most of the honey. Now for the first one. I found a swarm in the spring of the year, and was anxious to save them. They were in a hemlock tree, about eighty feet from the ground. I managed to get a rope over a limb about forty feet from the ground, then climbed the rope, and went up to examine the location of the bees. When I go up a tree I always carry a line in my pocket. With this I draw up an auger and then bore in, to ascertain where the honey and the bees are located. I then stop them in, and then draw up my saw. If the top stands perpendicular, I ascend to it and cut off the limbs on one side of the tree—thus throwing the heft of the tree top on the opposite side. Then feeling sure which way it will fall, I saw above bees and honey and let the top fall. I now draw up a line of sufficient strength to sustain a pole about ten feet long and three or four inches in diameter; having prepared the pole before I ascend or having an assistant to do it, as follows: Bore a hole near the larger end of the pole, another about three feet higher up, and a third near the top or smaller end. I now draw up this pole and place it where I need it, the top end about as high as

the log containing the bees. Now take a strong rope about thirty feet long, pass it through the lower holes and around the tree. Be thorough in this matter, tying the pole to the tree, and making it secure. Now take another rope, about twice the length from the bees to the ground, pass it through the upper hole in the pole and around the log containing the bees, having the other end of this rope extending to and on the ground. Have the rope kept taught. Two men below will hold it, but it may be well to take a turn around a log or tree, thus making it more safe and easier to hold. Then go below where the bees are located, and saw off the log containing them. Give the saw a direction inclining obliquely down, and as the log is cut off it will slip from the stub and be suspended between heaven and earth. Now, ease away below, and your *giantess* commences to descend to the ground.

It may be well to smoke the bees before you begin to disturb them. After they are down, fasten them in with cloths or tack on boards; and on a spring wagon carry them to their new location.

I have taken down twenty swarms from the woods. One from a tree 110 feet six inches high by actual measure. If the tree is clear of limbs seventy or eighty feet up just as well. Perhaps you would like to know how I get up, when I cannot ascend with my climbers. There it is. Just take a pound weight, (I prefer lead cast in an egg shell set in sand, placing a wire for a loop in the shell, and running in the melted lead, which gives you such an implement as I use). Tie a small line in this loop, unwind and lay it on a clean ground or free from bushes. Take a stout string or piece of eel skin about two feet long, and make it fast to the loop in the lead, and now with a little practice—or perhaps considerable—you will be able to toss the lead ball where you wish it. This weight carries your small line, that will in turn draw up a clothes' line, and that a line sufficiently stout and strong to operate with. Now make a fast loop in one end of the rope; put your leg through; take the other rope in your hands, passing the rope that suspends you within the folds of your arms. Let one or two men take hold of the rope and pull, and up you go. But there is danger, and as you fix and arrange matters, use discretion, and think I may not take down any more; although if I had an Italian *giantess* up there, she would soon find herself located in my apiary.

I have at this time about eighty stocks. They have done finely the past summer. Some logs are standing in my yard at this time. I may transfer them in the spring. By and by I may give my experience in hunting bees in Virginia on the James.

W. C. NEWTON.

FULTON, N. Y.

Among all the creatures which our bountiful God hath made for the use and service of man, in respect of great profit with small cost, of their ubiquity or being found in all countries, and of their continual labor and comely order, the bees are most to be admired.—BUTLER.

[For the American Bee Journal.]

Bees in Cliffs.

MR. EDITOR: Enclosed you will find a list of names of bee-keepers. I cannot say that any of them will subscribe for the JOURNAL, but I am satisfied it is worth the money, and that it will richly repay any one interested in bee culture.

In my neighborhood we have nothing but the box hive and the common black bee. In the coming spring, I expect to get some frame hives, but am at a loss to know whose patent to get. I also want some Italian bees, but do not yet know whom to purchase from. I want the purest I can get with the least expense. I noticed in your January number that Mr. J. R. Gardner, of Christiansburg, (Va.,) states that he had purchased three Italian queens for ten dollars. They were cheap, indeed, if they are pure Italians.

I am fully satisfied in my own mind that bees, with proper attention, can be made very profitable in this part of Kentucky. The black bee in its wild state, is found in hollow trees, and sometimes in cliffs or bluffs along our water courses. There is a bluff in Edmonson county, Kentucky, near the Mammoth Cave, in which I am credibly informed, bees have been working for many years. The oldest citizens say they were there as far back as they can remember. The cliff is said to be two hundred feet high and perpendicular. The bees work out at a hole in the rock about half way up the cliff. They are represented as being very numerous, and there are many speculations in regard to the quantity of honey stored there.

There is also a similar colony of bees in the bluffs of the Cumberland river in Cumberland county, Kentucky; but the cavity where they work out at, is said to be one hundred and fifty feet from the base and the top of the cliff. The bees are said to be in vast numbers.

I would like to know if any one has ever ascertained the quantity of honey stored by bees similarly situated in bluffs. I suppose there are other instances of the kind. What would be the best plan to take the honey stored in a cliff? If any of the readers of the BEE JOURNAL can give me a plan that will be satisfactory, without danger from the bees; I may at some future time have the pleasure of giving them an account of a big bee hunt.

Wishing you great success, I am, &c., &c.

N. P. ALLEN.

SMITH'S GROVE, WARREN CO., KY.

The hotter and dryer the summer is, the greater and more frequent are the honey dews. Cold and wet weather is unkind for them. Much rain at any time, as coming from a higher region, washeth away that which is already elevated; so that there can be no more, until another fit of hot and dry weather, and in the end it dissolveth them quite.—BUTLER.

A farmer near Northampton, Mass., recently took from a swarm of bees that had taken up their abode in the wall of his house, one hundred and twenty-five pounds of honey.

[For the American Bee Journal.]

Buckwheat on Poor Land.

Some thirty years ago when I lived in Canada, I had fat hogs, for I was a miller then, and you know that hog manure is very rich. I sowed a piece of ground with buckwheat for my bees, and on returning from the field, with some buckwheat in my sowing bag, I passed through the hog yard and it looked so nice and mellow that I strewed on the buckwheat, shut the hogs in the pen, harrowed in the buckwheat, and let it grow for the bees. The result was that scarcely a bee touched the field blossoms, but the hog yard beat all for bees you ever saw. Well, I learned a lesson then—that is, if you want honey, the richer the land the more honey you will get.

Now when a person asks me how much buckwheat shall I sow for my bees? I ask him how much manure are you going to put on your land? Manure your white clover patch, currants, gooseberries, raspberries, in fact every tree whose blossoms the bees are to work on. The richer the land the more honey the blossoms will produce. It is useless to sow buckwheat for bees on poor land. I saw a person last summer who had sowed the same piece of land to buckwheat for eight years in succession without manure, and he said for the last three years his bees have scarcely touched it. He concluded that they had got sick of buckwheat. But this year he plowed up his cow yard and sowed to buckwheat, and the way the bees worked on it beat all he ever saw. He took the hint from what I told him last summer. Is not this one great reason why so many people complain that their bees do not do as well as they did when the country was new, before they had skinned the land to death western fashion? This skinning process is as bad for bee-keepers as it is for farmers.

OSAGE, IOWA.

ELISHA GALLUP.

[For the American Bee Journal.]

When you set out your bees in the spring, set them on the ground by all means. That is, some of my bottom boards have an inch thick cleat nailed on the underside, and some of them a cleat two inches thick. Those cleats, set directly on the ground, have a strip of board or something fixed on the front side, so that when a loaded bee falls on the ground, he can crawl into the hive without any difficulty. Keep all grass and weeds away from the front of the hives, and do not set them in a row close together; but place them around your yard promiscuously, here and there. When set too close together, you are apt to lose many queens, by their making a mistake and entering the wrong hive when they return from the first flight. Before I knew better, I used to lose more or less in that way, every year. Two differently colored hives, side by side, will answer well enough.

OSAGE, IOWA.

E. GALLUP.

Dry weather makes plenty of honey, and moist weather of swarms.—BUTLER.

THE AMERICAN BEE JOURNAL.

WASHINGTON, MARCH, 1868.

THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at \$2 per annum. All communications should be addressed to the Editor, at that place.

Bees and Fruit-Blossoms.

A silly prejudice against bees is entertained by some fruit-growers, based on the notion that the crops of fruit are injuriously affected, both in quality and quantity, by the visits of bees during the blossoming period. A more unfounded notion, or one deriving less support from observation and science, can scarcely be conceived. Yet it regularly looms up once or twice in a century, and creates as much alarm and consternation among the wisacres, as the appearance of a comet used to do in by-gone days.

Repeated instances of the resuscitation of this prejudice, are presented in the history of bee-culture in Germany, especially in the period between 1530 and 1800. On some of these occasions it was so widely prevalent and so rabid in its demonstrations, as to constrain the almost total abandonment of bee-culture in districts where fruit-raising bore sway. To the aid of this came the substitution of cider and beer for the ancient mead or metheglin, as the popular beverage; and amid such opposition and discouragement, bee-culture rapidly sunk to be of very subordinate interest, except in some favorable localities.

In 1774, Count Anthony of Torrings-Seefeld, in Bavaria, President of the Academy of Science at Munich, striving to re-introduce bee-culture on his patrimonial estate, found in this generally prevalent prejudice, the chief obstacle to success. To overcome it, he labored assiduously to show that bees, far from being injurious, were directly beneficial in the fructification of blossoms—causing the fruit to *set*, by conveying the fertilizing pollen from tree to tree and from flower to flower. He proved moreover, by official family records, that a century earlier, when bees were kept by every tenant on the estate, fruit was abundant; whereas then, when only seven kept bees, and none of these had more than three colonies, fruit was scarcer than ever among his tenantry.

At the Apiarian General Convention, held at

Stuttgart, in Wirtemberg, in September, 1858, the subject of honey-yielding crops being under discussion, the celebrated pomologist, Prof. Lucas, one of the directors of the Hohenheim Institute, alluding to the prejudice, went on to say—"Of more importance however, is an improved management of our fruit trees. Here the interests of the horticulturist and the bee-keeper combine and run parallel. A judicious pruning of our fruit trees will cause them to blossom more freely and yield honey more plentifully. I would urge attention to this on those particularly who are both fruit-growers and bee-keepers. A careful and observant bee-keeper at Potsdam writes to me that *his trees yield decidedly larger crops since he has established an apiary in his orchard, and the annual product is now more certain and regular than before*, though his trees had always received due attention."

Some years ago a wealthy lady in Germany established a green-house at considerable cost, and stocked it with a great variety of choice native and exotic fruit trees—expecting in due time to have remunerating crops. Time passed, and annually there was a superabundance of blossoms, with only very little fruit. Various plans were devised and adopted, to bring the trees into bearing, but without success, till it was suggested that the blossoms needed fertilization, and that by means of bees the needed work could be effected. A hive of busy honey-gatherers was introduced next season; the remedy was effectual—there was no longer any difficulty in producing crops there. The bees distributed the pollen, and the *setting* of the fruit followed naturally.

As a further illustration of this topic, we are pleased to be able to lay before our readers the following letter from Mr. Packard, one of the editors of the *American Naturalist*, with which we have been obligingly favored by the gentleman to whom it was addressed. We trust it may contribute to prevent fruit-growers from doing themselves harm, as they assuredly will do if they allow their prejudices to give a wrong direction to their zeal:

ESSEX INSTITUTE,

SALEM, MASS., Jan. 31, 1868.

JOHN J. GOULD, Esq.

DEAR SIR:—In

answer to the question whether bees are in any way injurious to fruit, or lessen the quality or quantity, I would reply that all the evidence given by botanists and zoologists who have specially studied this subject, shows that bees increase the quality and tend to improve the

quantity of fruit. They aid in the fertilization of flowers, thus preventing the occurrence of sterile flowers, and by more thoroughly fertilizing flowers already perfect, render the production of sound and well developed fruit more sure. Many botanists think if it were not for bees and other insects, *many plants would not fruit at all.*

This whole subject of the great office which bees and other insects perform in the fertilization of plants, has been fully discussed in the May, July, and October numbers of the *American Naturalist*, and by Prof. Asa Gray, in the *American Agriculturist*, beginning in May, 1866.

It is alleged that bees do injury in some way by extracting the honey from flowers. What is the use in nature of honey? The best observers will tell you it is secreted by the plant, for the very purpose of attracting bees to the flower, otherwise it is of no use to the flower or fruit.

If all the bees were to be destroyed, I for one if a farmer, would prefer to go into some other business.

This prejudice against bees seems to us to have no foundation. Known facts prove the contrary. Farmers know too well the injury noxious insects do; it is more difficult to estimate the good done by hosts of beneficial insects.

I believe that every intelligent bee-keeper and naturalist will assent to the truth of the above remarks.

Yours very respectfully,
A. S. PACKARD, JR.

Spring Feed for Bees.

For stimulative feeding in the spring, or where weak colonies need aid, the Rev. Mr. Sholz recommends the following, in the *Bienenzeitung*: "Take two parts rye-meal, two parts crushed or pulverized loaf-sugar, and one part liquid honey; add a little warm water, and knead the whole to a stiff doughy mass. Spread this thinly on a piece of coarse linen or muslin, and lay it on the frames of movable comb hives, directly over the place where the bees are clustered. Spread over this a piece of woolen blanket or flannel, large enough to confine the bees to the hive below, and lay the honey-board loosely thereon. —Make an examination once or twice a week, and add further supplies when needed, till spring opens and the bees can provide for themselves. When coarse linen or muslin cannot be had, on which to spread the mixture, take some finer fabric and draw out every third thread of warp and woof, so as to make the food easily accessible to the bees. By this process colonies can be furnished with rye-meal and other nutriment,

without exposing the bees to chilling winds, or attracting unwelcome and officious visitors from neighboring apiaries. Colonies deficient in stores may thus be supplied at any time; but pure stimulative feeding, to induce breeding, should not be resorted to before the middle of April. For this purpose diluted honey should alone be used, in moderate doses, administered every other evening, and continued only about three weeks, unless the spring is unusually backward."

In the *Bienenzeitung* No. 12, for 1867, the Rev. Mr. Köhler announced that he had discovered a process to prevent Italian queens from having concourse with common drones, and securing their fertilization by Italian drones exclusively. Subsequently in No. 21, Mr. George Summer stated that the secret had been confidentially communicated to him, and that he had tested it on six occasions with uniform and complete success. And now in the *Bienenzeitung* No. 24, for December 20, 1867, which has just been received, the Baron of Berlepsch says that the process has likewise been communicated to him and Prof. Leuckart, and that it can be employed with ease and is perfectly reliable—not only securing purity of progeny in every case, but rendering improvement attainable, since both the queens and the drones to be bred from, can be selected.

As Mr. Köhler is poor, with a large family to provide for, he has been advised not to give publicity to the process until assured of adequate pecuniary compensation for a discovery so important and valuable. It is expected that this will be granted by either the Prussian or the Bavarian Government, or by the contributions of individual bee-keepers in Germany. We have taken measures to ascertain on what terms it can be made available in this country, and will in due time make known the result.

We are pained to learn that Professor VARRO, of Washington, Pa., died about a month ago, after a brief illness. His last letter to us is without date, though postmarked January 14. It contains no intimation or indication of impaired health, and we were hence entirely unprepared to hear of his decease.

We have still on hand a number of communications intended for this number, for which we were unable to make room:—among them one from Messrs. Langstroth & Son, respecting

the "*Honey Emptying Machine*." As the BEE JOURNAL is stereotyped, the forms have to be made up sometime in advance of the publication day, and we cannot make alterations or substitutions, however desirable, which would otherwise be practicable.

Wisconsin Bee-keepers' Association.

EDITOR BEE JOURNAL:—The Wisconsin Bee-keepers' Association held its third annual session in the rooms of the State Agricultural Society, in the Capitol, at Madison, on the 14th of February, 1868. Business of interest was transacted, and among other things it was decided to hold an annual meeting on Wednesday of State Fair week—notice to be given in the daily programme and by bulletins on the ground.

The following-named persons were elected officers for the ensuing year, viz:

JAMES BULLARD, of Evansville, President.

B. S. HOXIE, of Cooksville, Secretary.

A. M. HART, of Stockbridge, Treasurer.

The following resolutions were offered, and unanimously adopted:

1. *Resolved*, that the movable frame is indispensable to complete success in bee-culture; and to the end that the colony may be more fully under the control of the apiarian, it is quite essential that the frames be adjusted without *blocks*, *pins*, or *hooks*, as to their relative distance from each other.

2. *Resolved*, that in our opinion some suitable *permanent* house or protection for bees in winter, is more economical than an outdoor exposure.

3. *Resolved*, that artificial swarming is indispensable to success in practical bee-culture.

4. *Resolved*, that close proximity of hives is injurious to the bee-keepers.

No further business being presented, the Association adjourned, to meet as above indicated.

B. S. HOXIE, Secretary.

COOKSVILLE, Feb. 14, 1868.

[For the American Bee Journal.]

Inquiries: Size of Hives.

My bees have been quite a source of profit this year; sixty-five hives paying over *seven hundred dollars*, besides labor and expenses. I attentively read your BEE JOURNAL, and think I learn much not laid down in books.

I would like to ask the following questions.

In a section of country where there is little or no buckwheat honey to store in the fall, is it not better to make the hive larger than 2000 cubic inches in the clear—say about 2400 in Lat. 43.?

In a hive only ten or twelve inches high, is it not best to give more room, than in one fourteen inches high in the clear?

I have more questions to propose; but enough for the present.

D. C. B.

GOWANDA, N. Y.

Those hives that soonest rid their drones, are likely to be forwardest next year.—BUTLER.

[For the American Bee Journal.]

Size of Hives.

DEAR JOURNAL:—Appreciating the liberality and freedom extended to your correspondents, I take the liberty to make some remarks in answer to the "*Queries of Querist*," in regard to size and form of hive.

While I frankly acknowledge that I have a *Bee Hive* to sell, I trust that does not materially affect my judgment. And, as only those who have experimented largely with a view to obtaining a hive adapted to the wants of the bee keeper, and not inconsistent with the instincts of the honey bee, can answer the queries of Querist, I trust that what I may say will not be passed by without consideration.

In the latitude of western New York, with only a short honey season, a hive containing less than two thousand inches would be unsafe, unless in the hands of experts, and, so far as my observation extends, the same will hold true in most sections of the northern States.

The form of the hive, and the protection afforded by it, the length of the honey season, and the manner of wintering, will enable this estimate to be modified in special cases, perhaps, to advantage. In the form of a hive certain points may be gained. If, for instance, it is desirable to have the bees cluster between all the combs containing honey for their support in winter, it may be accomplished by using only seven large frames. If desirable to have all the honey in one place and above the bees in winter and not at both ends of the hive, triangular frames with one corner pointing up will accomplish the desired result. If straight combs with winter passages in them are desirable, frames in the form of a letter A, the cross bar being triangular and the side pieces of the same form, will ensure them. If it is desirable to concentrate the heat generated by the bees where the honey for their winter use is stored, instead of diffusing it over broad upper surfaces, and in remote corners, a sharp top hive will accomplish this as well.

If it is desirable to place spare honey boxes on a hive after having into it a large swarm of bees and yet not have brood deposited in them, a triangular hive, having the boxes arranged on the inclined sides will never fail.

If eight shallow, six pound supers are necessary to accommodate a vigorous stock of bees in the height of the honey season; and it is not desirable to spread out the hive beyond the number of combs between which the bees would cluster in winter, they may be arranged as above. If an old stock of bees will not accept spare boxes unless they are shallow and in close proximity to the brood, the upper inclined sides of a triangular hive will admit them of that form and in the desired position.

If the breath or warm air found in bee hives does not condense or form dampness, except when brought in contact with a cold surface, a sharp top hive having dry chaff packed closely on all sides except the bottom, will remain dry above the bees without upward ventilation.

These conclusions have been the result of years of patient study and successful experiment, and

while given without reasons have been thoroughly demonstrated.

The queries suggested by Querist, are of great importance, if we would make bee-culture both practical and profitable, and are deserving of as much consideration by the majority of the readers of the JOURNAL, as the exact shade seen in the third "golden circle" of doubtful, or otherwise, Italian Bees.

T. F. BINGHAM.

ALLEGAN, MICH.

[For the American Bee Journal.]

Alsike Clover.

MR. EDITOR.—Many bee-keepers have complained of being humbugged in buying seed of the above-mentioned plant, which proved to be nothing but common white clover, &c. In justice to Messrs. Thorburn & Co.'s advertisement, on last page of the BEE JOURNAL for February, I would say that I procured seed from them two years ago, and that last season it bloomed beautifully, the blossoms being a variegated mixture of white and red, and so much an ornament that they were shown as a floral curiosity to our friends. Bees were incessantly at work on them at all times.

We have found Messrs. Thorburn & Co.'s seeds in general quite reliable.

Respectfully, your old friend,

NOVICE.

[For the American Bee Journal.]

Wintering Bees in Cellars—Its Advantages and Disadvantages.

There are but few cellars well adapted to wintering bees successfully. The cellar should be dry, dark, and well ventilated—the ventilators so arranged as to exclude all light, and the draft so arranged that it can be governed according to circumstances. The temperature should be kept as near 36 degrees as possible. The hives should be elevated some distance from the floor, with the entrance or fly hole open, and freely ventilated at the top, so that all dampness caused by the breath of the bees may escape; otherwise the combs will mould. Box hives in which upward ventilation is not practicable, should be inverted and left uncovered.

The advantage of wintering in the cellar is that one-half less honey is consumed than when wintered in an unprotected place. If properly cared for, no swarms are lost and but few bees die.

The disadvantage is that they will not breed as rapidly in the latter part of winter and early spring in the cellar, as out in the open air.

Too high a temperature will cause restlessness, and if there is any light they will fly to it. If under these circumstances they are shut in the hive they rapidly become distended with feces, soil their hive, consume honey inordinately, and contract disease.

WM. W. CARY.

COLERAIN, MASS.

[For the American Bee Journal.]

Alsike Clover.

MR. EDITOR:—I have noticed in the JOURNAL a number of plants recommended to be cultivated for their honey-yielding qualities. Now I think the Alsike clover is just what we want, it being one of the best honey-yielding plants that we have, and the honey gathered from it is very thick and uncommonly pleasant. The bees, both Italians and black, gather honey from it as readily as from our common white clover.

It is also one of the most profitable crops that farmers can possibly grow for seed or food, or for both. On page 96, November number of the BEE JOURNAL, is an article on Alsike clover taken from the *Canada Farmer*. The small field of 3½ acres referred to in it, belongs to me. From it I secured twenty loads of hay, and from three-fourths of an acre adjoining it, I obtained four loads more—making twenty-four loads from four and a quarter acres. I saved the whole for seed, and have just threshed it. It yielded me 33½ bushels of beautiful seed, or about eight bushels to the acre. The seed sells here readily at eighteen dollars per bushel, or thirty cents per pound, making the snug little sum of six hundred and three dollars for the seed crop alone, or about one hundred and forty-one dollars per acre! And the hay, since it is threshed, I think as good as red clover hay. My horses and cattle eat it up readily and clean.

I think this clover will make a revolution in bee-keeping in this section, for my neighbors are all intending to sow some in the spring. Nearly the half of my stock of seed is already engaged. Some design to sow it to cut for seed, and some to cut for hay. Others intend it for pasture. There will consequently be no lack of bee pasturage in this neighborhood; and I hope there may be no lack of bees to visit the fields, where the blossoms supply so valuable a luxury.

H. M. THOMAS.

BROOKLIN, CANADA WEST.

[For the American Bee Journal.]

Questions.

No. 6. To what extent can one stock of bees be increased, artificially, in six months, with care and feed sufficient? And what quantity of sugar will it require for the same? The figures are wanted to see that it will pay. See vol. 2, No. 9, page 165.

No. 7. What portion of pure Italian queens, mating with black drones, will produce black workers; and, if any, what numbers of each queen will be black?

No. 8. Do pure Italian bees sport in color like the blacks?

No. 9. Bees carry honey from the hives to moisten flour with, when fed in the spring, to make the pellets and make them adhere to the baskets. Do they have to moisten the pollen, or is it naturally sticky enough to suit them?

JAY MONROE.